Outline

1. Change in productivity: a closer look.
2. US Great Depression Chapt. 22.2.
3. P^2 T.
   (a) Lack of information
   (b) Lucas critique.
   (c) Time consistency.
a: \(1 \rightarrow 2\).

\[ W = a F(u, z) \]

\[ P = \frac{a'}{1+\mu} \]

\[ P = \frac{a'}{1+\mu} \frac{W}{a} \]

with \( W \) taken from bargaining

\[ W = a^* F(\tilde{u}, \tilde{z}) \]

\[ P = (1+\mu) P^* F(u, z) = (1+\mu) P^* F(1-\frac{\tilde{u}}{a^*}, \tilde{z}) \]

People: People lose jobs (people).

People who stay more productive, get higher wages.
\[ Y = a N, \ a : 1 \to 2. \]

Price setting

Wage Bargaining

\[ P = (1 + \mu) \text{ labor cost associated with one good.} \]

\[ \mu = \frac{1}{a} \]

One person need to make one good.

\[ \text{cost: } W \]

Labor cost of producing one good:

\[ \frac{W}{\mu} = \text{ labor productivity.} \]

\[ P = (1 + \mu) \frac{W}{a} \]
In times of more rapid technical change (a ↑)
Income inequality goes up.

1920's, 1980's → 1990's.

Our analysis above is part of story of near increased inequality in times of accelerated change.

New things: Not everyone is the same.
old a hard time
young = easier time.

better access to education.

Luck.
US Great Depression.

why did it stay down so long?

why?

log y.

20th.
Broad level:
AD, AS shocks.
AD price shock.
Asset market stuff
Goods market stuff.
\( i, y \) both fell.

\( g, c, i \)
\[ \frac{C}{Y} \uparrow \]

\[ C = c_0 + c_1 (Y - T) \]

\[ \frac{C}{Y} = \frac{c_0}{Y} + c_1 \left( 1 - \frac{T}{Y} \right) \]

\[ \Rightarrow \frac{C}{Y} \uparrow \]
\frac{I}{Y} = 0.27 \rightarrow 0.06

Other business cycles:
- 1921-1922: \frac{I}{Y} = 0.27
- 1960: 0.27
- 1974: 0.27
- 1981: 0.27
- 1990: 0.27
- 2000: 0.27

Stock market sell ideas.

1920s: Lots of great new ideas.
1929: Gradually developed a sense that expectations were way too optimistic.
This shows the actual data on $I/Y$ in different recessions. Note how much bigger the drop in $I/Y$ was in the Great Depression compared with later recessions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak $I/Y$</th>
<th>Trough $I/Y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929III-1933I</td>
<td>0.25</td>
<td>0.06</td>
</tr>
<tr>
<td>1948IV-1949IV</td>
<td>0.26</td>
<td>0.23</td>
</tr>
<tr>
<td>1953II-1954III</td>
<td>0.24</td>
<td>0.22</td>
</tr>
<tr>
<td>1957III-1958II</td>
<td>0.24</td>
<td>0.21</td>
</tr>
<tr>
<td>1960II-1961I</td>
<td>0.23</td>
<td>0.21</td>
</tr>
<tr>
<td>1969IV-1970IV</td>
<td>0.24</td>
<td>0.22</td>
</tr>
<tr>
<td>1973IV-1975I</td>
<td>0.26</td>
<td>0.22</td>
</tr>
<tr>
<td>1980I-1982IV</td>
<td>0.27</td>
<td>0.22</td>
</tr>
<tr>
<td>1990III-1991II</td>
<td>0.23</td>
<td>0.21</td>
</tr>
<tr>
<td>2001I-2001IV</td>
<td>0.26</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Notes: Source for postwar business cycle data: Bureau of Economic Analysis' website. $I$ - Nominal household purchases of durable goods, plus gross private domestic investment; $Y$ - Nominal gross domestic product.
Puzzle: $\bar{Y} \downarrow$.

Monetary authorities did not make it. Actually, $\bar{Y} \downarrow$ by a huge amount (something to do with bank panics).

Possible explanation of $\bar{Y} \downarrow$:
1920's period of lots of optimism, but in the end people were one optimistic.

Look at stock market for people's valuation of investment projects. After 1929, stock market collapsed, consistent with view that their valuation of activities of firm less profitable than they thought before.
log, output, DOW Jones

- huge drop in stock prices, drastically revised down value of firms.

Observation
Story of stock market boom-bust in 1990s & 2000s similar to 1920s & 1930s story.
5. PE \uparrow.

\( \text{AS}(.p_{e^t}) \)
\( \text{AS}(p_e) \)
\( AD \)
\( Y_n \)

(a) No \( Y \) response
(b) \( Y \) response.

\( \text{AD} \rightarrow \text{Accommodate} \)
\( Y_n \)

\( \text{A response would occur if C.B. cares about people.} \)

\( \text{C.B. Dilemma} \)

\( \text{Democratic Society, that went through Great Depression.} \)
\( 1946 \text{ Full employment act.} \)

\( \text{Good: No recession} \)
\( \text{Bad: Higher prices} \)

\( \text{Accommodate} \)

\( \text{No Accommodate} \)

\( \text{Permanent change} \)
Phenomenon: CB everywhere are worried that expectations will become unshingled.

A rise in $p_e$ could be self-fulfilling if CB accommodates.

CB's try to convince people that they are "tough" so that if $p_e$ rises, they would not accommodate. This is supposed to prevent rise in $p_e$ in the first place.
Stabilization Policy

So far:

Intellectual foundation for proposition that $T$, $G$, $M$ should be manipulated to offset shocks.

Following discussion will cast doubt on proposition (A) for lack of information.

\[ \begin{align*}
    \text{year 1: } & Y_1 \rightarrow Y_2 \\
    \text{year 2: } & Y_2 \rightarrow Y_1
\end{align*} \]
Year 1: $\Pi$ down, AD shifts to $\Pi'$.  
Year 2: $\Pi$ back up, AD back to AD.

Suppose data comes in one year rate. Then $\Pi'$ hits AD after problem is gone.
(b) **Lucas Critique.**

\[ AD - As \ model \ misses \ something. \]

\[ C = c_0 + c_1 (Y - T). \]

\[ Y \uparrow \frac{\$1}{m}, \ C \text{ goes up by } \frac{\$1}{m}, \text{ no matter what.} \]

Find \$1 on sidewalk. (temporary)

Raise \$1. (permanent)

AC bigger for permanent than temporary.


Had to raise taxes.

Lucas:

Don't stabilize, you won't get is right.

Expectations matter for \( c_1 \) in ways that are hard to predict.
Lucas observation:

Impact of a policy change on economy depends on the parameters of the model.

But, the value of the parameter depends on whether people expect policy changes to be temporary or permanent.

Policy makers cannot know what people will think. For example, 1968 tax hike was "temporary," but when time came to undo it, another law could have been passed to make it permanent.

So, figuring out what people think is tricky. Since we can't easily figure this out, we should not engage in stabilization policies. According to Lucas